NON-PUBLIC?: N
ACCESSION #: 8912280001
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Joseph M. Farley - Unit 2 PAGE: 1 OF 03

DOCKET NUMBER: 05000364

TITLE: Reactor Trip Caused By A Voltage Transient On The Digital Electro-hydraulic Control (DEHC) Inverter
EVENT DATE: 11/18/89 LER #: 89-015-00 REPORT DATE: 12/18/89

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: D. N. Morey, General Manager-Nuclear Plant

TELEPHONE: (205)899-5156

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: JJ COMPONENT: INVT MANUFACTURER: W120
REPORTABLE NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

At 0433 on 11-18-89, with the unit operating at 100% power, the reactor tripped due to a turbine trip. The turbine trip is attributed to a voltage transient in the power circuit to the DEHC system. A voltage transient in this circuit is suspected to have caused the DEHC system to erroneously sense a loss of DC power. The voltage transient is attributed to the failure of the DEHC inverter.

The unit returned to power operation at 0455 on 11-19-89 using the alternate power supply.

The inverter was repaired and returned to service.

END OF ABSTRACT

Plant and System Identification

Westinghouse - Pressurized Water Reactor Energy Industry Identification
System codes are identified in the text as XX!.

Summary of Event

At 0433 on 11-18-89, with the unit operating at 100% power, the reactor AB! tripped due to a turbine TA! trip. The turbine trip is attributed to a voltage transient in the power circuit to the digital electro-hydraulic control (DEHC) JJ! system. A voltage transient in this circuit is suspected to have caused the DEHC system to erroneously sense a loss of DC power. The voltage transient is attributed to the failure of the DEHC inverter.

Description of Event

At 0433 on 11-18-89, the reactor tripped due to a turbine trip. The indication was that the DEHC system had experienced a loss of DC input power.

Following the trip, the operators implemented FNP-2-EEP-0 (Reactor Trip or Safety Injection) and FNP-2-ESP-0.1 (Reactor Trip Response), ensuring that the unit was safely in Mode 3 (Hot Standby). The unit was maintained in a normal stable condition.

The components that supply power to the DEHC system were inspected after the trip. The investigation has shown that, at the time of the turbine trip, a voltage transient in the inverter caused the DEHC system to erroneously sense a loss of all DC input power. The DEHC system is designed to trip the turbine when both DC power sources are lost. The voltage transient is attributed to internal shorting within the inverter. Several days earlier, the DEHC inverter (located in the Turbine Building) had suffered water intrusion damage from an overhead water leak. The inverter was repaired and returned to service. It appears that some moisture may have remained in the inverter and subsequently caused the inverter voltage transient.

Cause of Event

The reactor trip occurred due to a turbine trip. A voltage transient occurred in the inverter which supplies power to the DEHC system. The inverter transient is attributed to damage caused by residual moisture

from an earlier event.

Reportability Analysis and Safety Assessment

The event is reportable because of the actuation of the reactor protection system. After the trip, the following safety Systems operated as designed:

- main feedwater was isolated with flow control valves and bypass valves closed
- auxiliary feedwater pumps started automatically and provided flow to the steam generators
- source range nuclear instrumentation automatically energized
- pressurizer heaters and spray valves operated automatically as required to maintain system pressure.

There was no effect on the health and safety of the public.

Corrective Action

The inverter was repaired and returned to service. A shield has been installed to protect the DEHC inverter from water intrusion.

Additional Information

The unit returned to power operation at 0455 on 11-19-89.

No similar LERs have been submitted by Farley Nuclear Plant.

The inverter was supplied by HDR Power Systems.

The model number of the inverter is STI-240-010-3, STS-010-3, MBS-010-3.

This event would not have been more severe if it had occurred under different operating conditions.

Alabama Power Company
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Post Office Box 1295
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Telephone 205 868-5581

W. G. Haimton, III
Senior Vice President
Nuclear Operations

Alabama
Power
the southern electric system
10CFR50.73

December 18, 1989

Docket No. 50-364

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Dear Sir:

Joseph M. Farley Nuclear Plant - Unit 2
Licensee Event Report No. LER 89-015-00

Joseph M. Farley Nuclear Plant, Unit 2 Licensee Event Report No. LER 89-015-00 is being submitted in accordance with 10CFR50.73.

If you have any questions, please advise.

Respectfully submitted,

W. G. Hairston, III

WGH,III/JAR:md 8.61

Enclosure

ec: Mr. S. D. Ebneter
Mr. G. F. Maxwell

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